AN ALPINE VARIETY OF SOLIDAGO MACROPHYLLA.

M. L. Fernald.

Botanists who have collected in the Alpine Garden of Mt. Washington are familiar with a dwarfed extreme of *Solidago macrophylla* which, in some characters other than its low stature, differs from the common tall plant of the wooded slopes of the White Mountain region. The plant of the woods, which is widely distributed through the coniferous forests from Newfoundland and southern Labrador to Lake Superior, south to central Maine and New Hampshire, Mt. Monadnock, Mt. Greylock, and the Catskills, has the involucre of the oblong-cylindric heads composed of linear-attenuate thin, often scarious, bracts. In the plant of the Alpine Garden, on the other hand, the involucre of the much fuller and broader subglobose heads is composed of shorter narrowly deltoid to lanceolate firmer, often subherbaceous, bracts.

As it occurs on Mt. Washington, the alpine plant with broader heads and broader firmer bracts is generally considered an extreme of the woodland *S. macrophylla*. Further north, however, where the latter species with narrow bracts and oblong heads is the commonest goldenrod at low altitudes, it gives way, in the alpine and exposed situations, to the larger-headed plant with broader bracts, so generally as to indicate that this plant is worthy more definite recognition than is ordinarily given it. Thus, in the Gaspé Peninsula of Quebec the typical *S. macrophylla* of Pursh, the plant with oblong heads and linear-attenuate bracts, is everywhere abundant in woods and clearings from sea-level to the wooded mountain-slopes. In the alpine and subalpine regions, however, of the great tablelands of Mt. Albert and of Table-topped Mountain, the common representative of *S. macrophylla* is the plant with broad subglobose heads (in extreme specimens 2 cm. in diameter), which abounds over fully a hundred square miles of alpine meadows and slopes.

Still further north, on the Labrador coast, likewise, the plant of exposed situations is like the large-headed plant of the Alpine Garden. In fact, all the material known to the writer from north of the Straits of Belle Isle is of this plant; and there is no question that it is *S. thyrsoidea* which was described in 1830 by Ernst Meyer from Okkak (latitude 57° 30′) on the Labrador Coast. The same plant, as found

in the Alpine Garden of Mt. Washington, was also recognized by A. P. de Candolle as distinct from Pursh's *S. macrophylla*. In the Prodromus, in 1836, de Candolle described the White Mountain plant as *S. leiocarpa*.[1] His material, sent by "Dr. Boot" in 1830 from the White Mountains, is, as shown in the Prodromus Herbarium, the characteristic plant of the Alpine Garden.

In interpreting the earlier *Solidago macrophylla* of Pursh[2] we are naturally at a disadvantage from the meagre description and from the fact that the type is apparently not extant.[3] Pursh's description was taken from "*Herb. Banks. mss.*" and the plant, "about three feet high" with "calycibus oblongis" came from "Canada." The "Canada" of Banks was, of course, the low forested eastern region where the tall plant with oblong heads and linear-attenuate bracts abounds and where the other is unknown; and it is very safe to assume that this common plant was rightly identified by Dr. Gray[4] as *S. macrophylla*.

The two plants here discussed are ordinarily well distinguished, but since the only characters by which they seem to differ are those of size of head and breadth of bracts, both features which show a wide range of variation and a strong tendency to intergradation, it is probable that they are best treated as extreme phases of one plant: the woodland *S. macrophylla* of eastern Canada and the upland regions of New England and New York with oblong heads and linear-attenuate thin mostly scarious bracts; and an extreme variation of it growing in more alpine or subarctic regions and characterized by broader subglobose or oblong-ovoid heads and lanceolate to narrowly deltoid greener bracts. This plant of the Labrador coast and of our alpine regions should be called

SOLIDAGO MACROPHYLLA Pursh, var. **thyrsoidea** (E. Meyer) n. comb. *S. thyrsoidea* E. Meyer, Pl. Lab. 63 (1830). *S. leiocarpa* DC. Prodr. v. 339 (1836).— LABRADOR, at various coastal stations: QUEBEC, alpine and subalpine regions of Mt. Albert and of Table-topped Mountain: NEW HAMPSHIRE, Alpine Garden, Mt. Washington.

GRAY HERBARIUM.

[1] DC. Prodr. v. 339 (1836).

[2] Pursh, Fl. 542 (1814).

[3] See Gray, Proc. Am. Acad. xvii. 187 (1882).

[4] Gray, l. c.